In the dry state numerous minute crystals of sulphate of calcium were visible in the clay.

In the least low-lying parts of the area salt water is reached at from two feet and a half to three feet; in the most depressed it remained permanently on the surface during the whole period of the excavations, which extended over the dry months of August, September, October, and November. In parts which are neither the highest nor the lowest the surface clay remains merely damp, and it was in ground of this character that the bones in best condition were found, provided that the underlying water did not approach the surface too nearly. In such cases, and in the very low places where the water remained permanently on the surface, it was impossible to excavate on account of the excessive inflow into the holes.

(*To be continued.*)

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

Oxford.—Sir Henry W. Acland, Bart., and Prof. J. S. Burdon Sanderson have been appointed representatives of the University at the eighth International Congress of Hygiene and Demography, to be held at Buda-Pesth in September.

The Sixth Annual Report of the Delegates of the University Museum has been published, and gives evidence of steadily increasing activity in the scientific work of the University. With increasing activity increased wants are felt, and the Regius Professor of Medicine, the Professor of Experimental Philosophy, and the Hope Professor of Zoology state that extra space is required for particular subjects required to be taught or exhibited in their departments. The reports of the Linacre Professor, and of the Curator of the Pitt Rivers Museum, contain long lists of specimens which have been added by gift, purchase, or exchange to the collections under their care, and one of the most satisfactory features of the report is the statement of the various researches which have been carried out in different laboratories during the past year.

Cambridge.—In addition to the honorary doctor's degrees to be conferred in connection with the visit of the Royal Agricultural Society to Cambridge, the honorary degree of M.A. will be conferred on June 27 on Mr. Ernest Clarke, secretary, and Dr. J. A. Voelcker, consulting chemist, to the Society.

Mr. A. E. Shipley, of Christ's College, has been appointed University Lecturer in the Advanced Morphology of the Invertebrata for five years from Michaelmas 1894, in the room of Prof. S. J. Hickson.

Mr. S. Ruhemann, of Gonville and Caius College, has been reappointed University Lecturer in Organic Chemistry for five years from Michaelmas 1894.

Mr. J. J. Lister, of St. John's College, has been appointed University Demonstrator of Comparative Anatomy.

At St. John's College the following awards in Natural Science were announced on June 18:—

Foundation Scholarships assigned or continued: W. L. Brown (Physiology); W. McDougall (Physiology and Anatomy); S. S. F. Blackman (Zoology); W. C. Brown, Butler, Orton, and R. J. Horton-Smith (subjects of Natural Sciences Tripos, Part I.); V. H. Blackman, Northcott, Tollent, West (second year subjects); Hemmy, Morgan (first year subjects). Hutchinson Studentship (for research in Pathology): F. Villy. Hughes Prize (third year): S. S. F. Blackman. Wright's Prizes: Tallent (second year), Hemmy (first year). Herschel Prize (for Astronomy), Fearnley.

SCIENTIFIC SERIALS.

The American Meteorological Journal for June contains a summary of an interesting article by Dr. F. Umlauft, on the names of the winds, originally published in the *Deutsche Rundschau für Geographie und Statistik* (vol. xvi. No. 3). The winds are mostly named according to the regions from which they come; thus winds blowing from land to sea are called land-breezes, and *vice versa*. The original names of the east and west points of the compass, and of the winds from those points, were derived from words connected with the appearance and disappearance of daylight; the names of north and south were principally associated with the kinds of weather that came from those points. Other names for the winds are associated with certain definite characteristics. In some places, on lakes, the winds are termed lower or upper winds, according to whether they originate at the lower or upper end of the lake; on the lake of Garda the upper wind is called *Sopero*, from the Italian *Sopra*, on the lake of Geneva; the wind coming down from the Vaud country is known as *Vaudaire*; and in the Rhine valley, the breeze blowing from the Wisp Valley is called *Wisperwind*. The Italians call their north-east wind *Greco*, and the Romans called the south-west wind *Africus*, while the Italians still call it *Affrico*. Homer names four winds only: Boreas, the north wind coming from Northern Greece; Zephyros, the west wind, from the word meaning darkness; Euros, indicating light, means a wind from the east; and Notos, from the word *Notios*, wet, a south wind in Greece. Winds are further named according to their influences and effects for good or evil; in Switzerland and the Tyrol the warm wind which melts the snow is known as *Aperwind*; while *Bise, Bis* or *Beiss* are the names given to the cold north wind; and *Maestro*, or master-wind, is the name given to the north-west wind which prevails in summer over the Adriatic; in France the word becomes *Mistral*, and it is a destructive wind. The word *Samoom*, given to the destructive desert wind of Arabia, is derived from the Arabic word *Ssim*, poison. For further particulars we refer our readers to the original article, which has also been reprinted in the *Meteorologische Zeitschrift* for January last.

Wiedemann's Annalen der Physik und Chemie, No. 6.—On the radiation of gases, by F. Paschen. The long-wave spectrum of water vapour and the absorption spectrum of liquid water is here dealt with. Rubens's latest re-determinations of the dispersion curve of fluorspar show that all the author's wave-lengths above 2·6 μ, based upon Rubens' and Snow's previous results, are untrustworthy. The author deals fully with Pringsheim's criticism of his work.—On some methods of determining the pitches of high notes, by F. Melde (see p. 155).—On the relation between the lowering of the freezing-point of solutions and their osmotic pressures, by C. Dieterici. The author works out an equation by which the osmotic work may be calculated from the depression of the freezing point, even in cases where the latter amounts to 50° C.—On the absorption of hydrogen by water and aqueous solutions, by Paul Steiner. The coefficients of absorption may be roughly divided into two groups—those of solutions of monad salts, of K, Li, and Na, and those of dyad salts, such as K_2CO_3, $CaCl_2$, Na_2SO_4. The curves exhibiting the relation between absorption and concentration form two bunches for the two groups. The curve for sugar solution is approximately a straight line, intersecting the curves of the second group.—On the electric conductivity of some salts dissolved in ethyl and methyl alcohol, by B. Völlmer. The molecular conductivities of the electrolytes tested in the alcohol increase as the concentration decreases. With extreme dilution they approach a limiting value, except those of $CaCl_2$ and CaN_2O_6 in ethyl alcohol. The conductivity also decreases as the molecular weight of the solvent increases.—On the similarity of the light emitted by an after-glowing Geissler tube and the beginning of the glow of solid bodies, by Carl Kirn. The spectrum of the after-glow contracted into a space between the wave-lengths of 555 and 495 $\mu\mu$, and appeared greyish-yellow. This is in accordance with Weber's observation, who noticed that a solid does not begin to glow red, but that the first colour to appear is a greenish-yellow band in the region of maximum luminosity of the solar spectrum.—On the electric and magnetic forces of the atoms, by F. Richarz.—On the forms of motion upon which electromagnetic phenomena may be based, by Hermann Ebert.

SOCIETIES AND ACADEMIES.

London.

Royal Society, May 24.—"On the Measurement of the Magnetic Properties of Iron." By Thomas Gray, Professor of Dynamic Engineering, The Rose Polytechnic Institute, Terre Haute, Indiana.

This paper gives the results of a continuation of the investigation which formed the subject of a paper communicated to the Royal Society in 1892, and published in the *Philosophical Transactions*, vol. clxxxiv. A. pp. 531–542. The results now given have been to a large extent obtained by the same method, namely, from the curves giving the relation of the current flowing in the circuit to the time measured from the application or the reversal of the impressed E.M.F. on the circuit. In this case, however, the personal element has been eliminated from the curves by the application of the autographic recorder referred to as under construction in the previous paper. This apparatus, which is a modification of the "Thomson siphon-recorder," has been found to work satisfactorily, and has considerably increased the ease and the accuracy with which the curves can be produced. A description of the apparatus and specimens of the curves drawn by it are included in the paper. There is also included in the paper a description of the apparatus and method of experiment in the application of a wattmeter to the determination of the energy dissipated by transformers under E.M.F.'s of different frequency of alternation. The accuracy of the measurements so made were checked by comparison with the results of measurements made by Joubert's instantaneous contact method. The apparatus and method of experiment adopted for the application of this method were to some extent different from those commonly employed, and they are therefore described.

The results of some further experiments on the large electromagnet used in the previous experiments, and described in the paper above referred to, are given, but a large part of the results quoted in this paper refer to closed circuit transformers of the types manufactured by the Westinghouse and the Genera Electric Companies. The experiments have been chiefly directed to the following points:—

(1) *A Comparison of the Total Energy required to produce Different Magnetic Inductions, and the Corresponding Dissipation of Energy.*—In connection with this, the effect of air gap in the magnetic circuit has been investigated somewhat more fully. It is shown that, by introducing a moderate air gap, the energy dissipated for a given induction through the coils may be reduced one-third.

(2) *The Law of Variation of Hysteresis with Variation of Induction.*—The experiments indicate that, although for any special case the energy dissipated can be approximately expressed by an equation of the form $E = AB^{\alpha}$, that both A and α are different for different kinds of iron. It seems probable, also, from the results obtained, that α is not absolutely constant for any one iron, but that it increases with increase of B.

(3) *The Effect of Increased Frequency of Cyclic Variation of Magnetism on the Dissipation of Energy.*—In this investigation a transformer, the iron case of which was made up of very thin sheets, was used. The thickness of the sheets was about 16·100ths of a millimetre, and the sheets were insulated from each other by means of thin paper. The full load capacity of the transformer was about 6000 watts. The range of frequency (including the autographic recorder, the wattmeter and the Joubert's instantaneous contact method experiments) was about from 3 per minute to 8000 per minute. The results indicated that, throughout this range, there is no variation in the dissipation of energy per cycle when the inductions are equal.

Data deduced from these experiments as to the magnetic qualities of the iron used in the different transformers is given in the paper.

Zoological Society, June 5.—Sir W. H. Flower, K.C.B., F.R.S., President, in the chair.—The Secretary read a report on the additions that had been made to the society's menagerie during the month of May.—Mr. Sclater made some remarks on the chief animals that he had observed during a recent visit to the Zoological Gardens of Rotterdam, Amsterdam, Hanover, Berlin, and Hamburg.—A communication was read from Dr. E. A. Goeldi, containing critical remarks on the opossums of the Serra dos Orgãos, Rio de Janeiro, Brazil.—Mr. O. Thomas gave an account of the gazelles of Algeria, chiefly based on specimens brought home by Sir Edmund Loder, and distinguished three unquestionable species, *Gazella dorcas, G. cuvieri*, and *G. loderi*, the last being a new species of which examples had been obtained by Sir Edmund Loder in the sand-hills three days south of Biskra. A fourth gazelle, of which a skin and skull had been bought by Sir Edmund Loder in Algiers many years ago, was referred with some doubt to *Gazella corinna*, the Corinne of Buffon.—Sir Edmund Loder then gave an account of his expedition in search of the "Reem," as the *Gazella loderi* is called by the Arabs, and stated what he had learnt of its habits and distribution.—A second communication from Sir Edmund Loder contained remarks on the period of gestation of the Indian antelope, as observed in captivity.—A communication was read from Dr. W. B. Benham, containing notes on a particularly abnormal vertebral column of the bull-frog (*Rana mugiens*), and on certain other variations in the anurous column of this frog.—Mr. Lindsay Johnson read a communication on the pupils of the felidæ, and stated that, after an examination of the eyes of 180 domestic cats, as well as the eyes of all the felidæ in the society's gardens, he had come to the conclusion that the natural shape of the pupil in *Felis* is circular. Although under various degrees of light one might get every shape from the circle through all degrees of oval to a perfectly vertical line, yet instillations of atropine or cocaine solutions caused every pupil to become a true circle. The younger the cat the greater the tendency for the pupil to become pointed oval in ordinary light, and, conversely, the older the cat the more frequently did we find a circular pupil. Brilliant light always caused contraction to oval, and direct sunlight to a thin line in the smaller felidæ; in the larger felidæ Mr. Johnson had frequently found the pupils contract to a small circle. Suddenly alarming a cat had the effect of momentarily dilating the pupil; while in sleep the pupil was always contracted. The communication was illustrated by models and diagrams.

Entomological Society, June 6.—Henry John Elwes, President, in the chair.—Mr. W. F. H. Blandford exhibited a series of eleven male specimens of *Rhina barbirostris* from British Honduras, of which the largest and smallest examples measure respectively 60 and 17 mm. The difference in bulk, supposing the proportions to be identical, is as 43 to 1. He remarked that this variation of the size is especially common in the *Brenthidæ, Cossonidæ*, and other wood-boring Coleoptera. The President, Dr. Sharp, F.R.S., the Rev. Canon Fowler, Mr. Jacoby, the Hon. Walter Rothschild, Mr. Merrifield, and Mr. Champion took part in the discussion which ensued.—Mr. A. J. Chitty exhibited specimens of *Cardiophorus equiseti* taken near Braunton, on the north coast of Devon, in May 1891. Mr. Champion and Mr. Blandford made some remarks on the species.—Mr. McLachlan, F.R.S., exhibited for Mr. J. W. Douglas male specimens of a Coccid (*Lecanium prunastri*), bred from scales attached to shoots of blackthorn (*Prunus spinosa*) received from Herr Karel Sulc, of Prague. Mr. Douglas communicated notes on the subject, in which he stated that the species was common on blackthorn in Germany, and should be found in Britain.—Lord Walsingham, F.R.S., exhibited a series of *Cacœcia podana*, Scop., reared from larvæ feeding on *Lapageria* and palms in Messrs. Veitch's conservatories in King's Road, Chelsea, including some very dark varieties. The Hon. Walter Rothschild stated that he had taken the species on lime. Mr. Hampson and Mr. Tutt also made some remarks on the habits of the species.—Mr. C. Fenn exhibited a long series of *Selenia lunaria*, bred from one batch of eggs, which included both the spring and summer forms; and also two unforced specimens, which emerged in November. He remarked that the variation between the two emergences, viz., spring and summer, is considerable, and also the range of variation *inter se*, especially in the spring form; but it is very remarkable that the summer form has one or two representatives among the specimens of the spring emergence. He said that the parent female was taken at Bexley in May 1893.—Mr. F. Lovell-Keays exhibited a variety of *L. alexis* (female), having the marginal ocelli on the hind wings entirely without the usual orange-coloured lunules. The specimen was captured at Caterham on May 22, 1894, and was the first example of the species observed by the captor this season. Mr. Barrett made some remarks on the specimen.—Mr. J. H. Durrant exhibited a series of *Steganoptycha pygmæana*, Hb., taken at Merton, Norfolk, between March 25 and the middle of April last. Lord Walsingham made some remarks on the species.—Mr. H. Goss read an extract from a report from Mr. J. R. Preece, her Majesty's consul at Ispahan, to the Foreign Office, on the subject of damage caused to the wheat crop in the district of Rafsinjan by an insect which was called "Sen" by the natives, and which he described as "like a flying bug, reddish-olive in colour, with heavy broad shoulders." Mr. Goss said he had been asked by Mr. W. H. Preece, F.R.S., to ascertain, if possible, the name of the species known to the natives as "Sen." Dr. Sharp said that in the absence of a specimen of the insect it was impossible to express an opinion as to the identity of the species.—The Rev. Canon Fowler exhibited for Miss Omerod specimens of *Diloboderus abderus*, Sturm, *Eucranium arachnoides*, Brull., and *Megathopa violacea*, Blanch., which she had received from the La Plata district of the Argentine territories, where they were said to be damaging the grass crops. He also read notes from Miss Ormerod on the subject.—Mr. Hampson raised an important point as to what was the legal "date of publication" of part i. of the *Transactions* of the Society, 1894. He pointed out that the question of the priority of the names of certain new species described therein would depend upon the date of publication. A long discussion then ensued, in which Dr. Sharp, the Hon. W. Rothschild, Mr. Goss, Mr. McLachlan, Lord Walsingham, Prof. Poulton, F.R.S., and Mr. Verrall took part.—Prof. Franz Klapálek, of Prague, communicated a paper entitled "descriptions of a new species of *Raphidia*, L., and of three new species of Trichoptera from the Balkan Peninsula, with critical remarks on *Panorpa gibberosa*, McLach."—Lord Walsingham, ex-President and Vice-President, then took the chair, and a special general meeting convened under chap. xviii. of the bye-laws was held.

Geological Society, June 6.—Dr. Henry Woodward, F.R.S., President, in the chair.—On the banded structure of some tertiary gabbros in the Isle of Skye, by Sir Archibald Geikie, F.R.S., and J. J. H. Teall, F.R.S. After calling attention to the previous references to the pseudo-bedding and banding of the gabbro masses of the Inner Hebrides, the authors described the rocks which form the rugged ridge of Druim-an-Eidhne, near the head of Glen Sligachan. This ridge is made up of parallel beds, sheets, or sills disposed in a general N.N.W. direction with a prevalent easterly dip. Four distinct types of gabbro occur: (1) dark, fine-grained, granulitic gabbros; (2) well-banded gabbros; (3) coarse grained massive gabbros; and (4) pale veins of a highly felspathic gabbro. The relative ages of the banded and granulitic gabbros have not been definitely settled; but the coarse, massive gabbros are certainly intrusive in the banded series, and the pale veins cut all the other varieties. The authors dealt mainly with the banded gabbros. These occur in successive sheets or sills which vary from a few feet to many yards in thickness, and consist of parallel layers of lighter and darker material which correspond in direction with the trend of the sheets, and are usually inclined to the east or south-east at angles ranging from 20° to 30°. In some cases the bands can be seen to have been puckered or folded. The minerals entering into the composition of the banded, as also of the other varieties, are labradorite, pyroxene, olivine, and titaniferous magnetite. The banding is due to a variation in the relative proportions of the different constituents, and especially in the amount of magnetite. Some narrow bands and lenticles are composed entirely of pyroxene and magnetite. The variations in chemical composition were illustrated by three analyses by Mr. Player. The microscopic characters of the rocks were described, and it was shown that the minerals of the banded gabbros have not been crushed or broken since they were formed. The authors concluded that the banding is the result of the intrusion of a heterogeneous magma, and that similar banding in certain portions of the Lewisian gneiss may have been produced in the same way. Dr. Johnston-Lavis, Prof. Blake, Dr. Hicks, Mr. Harker, and Mr. J. Hort Player spoke upon the subject of the paper, and Sir Archibald Geikie briefly replied.—On the microscopical structure of the Derbyshire carboniferous dolerites and tuffs, by H. H. Arnold-Bemrose. This paper dealt with the petrography of the toadstones or igneous rocks of Derbyshire. Brief reference was made to the work of previous petrographers, the age of the rocks, and the question as to the number of beds. The outcrops mapped by the geological survey, and several additional ones, have been examined, and the results were given in a table for the purpose of the paper and for future reference. The toadstone was divided into massive rocks or lavas, and fragmental rocks or tuffs. The former consist of olivine-dolerite, either with granular or with ophitic augite, and olivine-basalt. The rock is often very fresh, but in some places is altered to a diabase. The principal constituent minerals were described. A pseudomorph of olivine, optically like biotite and somewhat like Iddingsite, but differing from it chemically, was fully described. A discussion followed, in which Sir Archibald Geikie, Mr. W. W. Watts, and Dr. Johnston-Lavis took part.—On the origin of the Permian breccias of the Midlands, and a comparison of them with the upper carboniferous glacial deposits of India and Australia, by R. D. Oldham. The author first described the Permian breccias of the Midland counties of England, which he had the opportunity of examining at Eastertide of the present year. He described the characters of the breccias, and concluded that they were formed subaërially as gravel-fans by rivers charged with a maximum load of sediment, and therefore incapable of performing any appreciable amount of erosion. An examination of many of the fragments at Abberley and some at Church Hill revealed the presence of scratches, which occur in such a manner that the author believed they existed on the fragments before they were transported, and discussed the evidence for their production by ice or soil-cap movement, deciding in favour of the former. A short description of the upper carboniferous deposits of India followed, and it was pointed out that they differ markedly from the deposits of Britain. Amongst other things the separation of different pebbles by considerable interspace of matrix, and the bending of stratification-planes round a pebble as though the pebble had dropped from above, was noted, and it was maintained that floating ice alone will account for these pebbles being dropped into the Indian deposits. Finally, it was remarked that the so-called upper carboniferous deposits of India and the Permian deposits of the Midlands of Britain may be practically contemporaneous, as maintained by the late Mr. H. F. Blanford, indicating a possible simultaneous existence of glaciers in England, India, and Australia. Prof. Lapworth made some remarks upon the paper, and the author replied.

Linnean Society, June 7.—Mr. C. B. Clarke, F.R.S., President, in the chair.—The President nominated as Vice-Presidents for the year Messrs. J. G. Baker, W. Carruthers, F. Crisp and Prof. C. Stewart.—Dr. John Lowe communicated the results of observations made by him in Madeira and Teneriffe on the habit in certain insectivorous small birds belonging to the genera *Sylvia*, *Phylloscopus* and *Parus* (of which specimens were exhibited) of puncturing the calyces of flowers for the purpose of attracting insects on which they feed. An interesting discussion followed, in which the President, the Rev. G. Henslow, and others took part—Mr. Carruthers exhibited a series of photographs of the celebrated Cowthorpe Oak in Yorkshire, taken at long intervals, commencing with a reproduction of Dr. Hunter's engraving of 1776, and made remarks upon the rate of growth and decay, and probable duration of life in this tree.—Mr. Raymund Dowling exhibited and made remarks upon a dwarf glaucous pine, and some curiously shaped *Trapa* fruits from Japan.—Mr. Thomas Christy exhibited specimens of two species of *Polygonum* (*P. sachalinense* and *P. cuspidatum*), of value for forage, and pointed out that the roots of the mature plants, when cut, are, in the former species, of a whitish colour, and in the latter of a bright yellow, enabling the two to be readily distinguished apart from the leaves.—A paper was then read by the Right Hon. Sir John Lubbock, Bart., M.P., F.R.S., on stipules and the protection of buds. A discussion followed, in which the Rev. G. Henslow, Mr. A. W. Bennett, Prof. Marshall Ward, and Mr. John Fraser took part.—Before the meeting adjourned, the President announced that a bust of Charles Waterton, the Yorkshire naturalist, and author of "Wanderings in South America," had been presented to the Society by the trustees of the late Mrs. Pitt Byrne (*née* Busk). This bust was executed in 1865 (the year in which he died, at the age of eighty-three) by the late Mr. Waterhouse Hawkins; it is an excellent likeness, and the only bust of him in existence. The only accessible portrait of him is a small engraving by Adlard, which forms a frontispiece to the third volume of the "Essays on Natural History," from an original oil painting by Charles W. Peale, made in Philadelphia in 1824, when Waterton was in his forty-second year.

Cambridge.

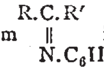
Philosophical Society, May 28.—Prof. T. McKenny Hughes, President, in the chair.—The announcement was made that the adjudicators of the Hopkins prize for the period 1889-91 have awarded the prize to Prof. J. J. Thomson, F.R.S., for his researches on electrical oscillations and other important contributions to electrical theory.—Mr. Warburton exhibited specimens of the nest of *Trochosa picta*, a Lycosid spider found in abundance on the sand-hills of Southport. The nest is not so simple as was supposed, as it possesses a pouch or off-shoot from the main burrow directed upwards and forwards. In this the spider takes refuge when disturbed.

There are two well-marked varieties of this species, the one being pale and light-coloured, and inhabiting the sandhills of Poole in Dorsetshire and Southport in Lancashire, while the dark variety occurs in various localities on dark peaty soil.—Mr. S. Skinner exhibited specimens of magnetic rock. The fragments of rock shown were from the Riffelhorn, near Zermatt, a mass of rock which appears to be permanently magnetised in a direction E.—W. with north polar magnetism towards the west. They are composed of serpentine with small veins of magnetic oxide of iron. The magnetic fields of these fragments have been mapped with a small compass needle and show both regular poles and consequent poles. It is suggested that the magnetism preserved in these fragments was due to magnetic forces acting at the time of the formation of the veins of magnetic ore. With certain assumptions, it follows that these forces acted almost at right angles to the present direction of the magnetic meridian, a conclusion possibly consistent with our present knowledge of the secular variation.—Mr. A. C. Dixon read a paper on a "Geometrical proof of a Theorem of Convergency."

DUBLIN.

Royal Dublin Society, April 18.—The Earl of Rosse in the chair.—Dr. G. Johnstone Stoney, F.R.S., communicated a paper on a mounting for the specula of reflecting telescopes, designed to remove the impediment to their being used for celestial photography. The author observed that reflecting telescopes are much cheaper than refractors; moreover, their uniting rays of all refrangibilities in one focus would give them an immense advantage over refractors for photographing the heavens and in celestial spectroscopy, were it not for the difficulty of keeping their line of collimation sufficiently fixed. This difficulty arises from the necessity of supporting the speculum by a very equable pressure applied over its whole back. The mechanical appliances for securing this must be so delicate that they yield a little when the telescope is moved from one altitude to another. The author of the present communication proposes to get rid of this imperfection by substituting compressed air for the "bed of levers" or layers of flannel which have hitherto been employed, and he describes a regulator through the intervention of which the pressure will vary automatically according to the requisite law when the telescope is moved from one altitude to another. With this contrivance the speculum is made the front of a closed chamber, and rigidly maintains its position with reference to it, and therefore with reference to the tube of the telescope, however the latter may be moved about. — Sir Howard Grubb, F.R.S., read (*a*) a note on the effect of tarnish on the transmission of light through telescopic objectives; (*b*) a note on the construction of an equatorial with complete circumpolar motion.—Prof. W. Noel Hartley, F.R.S., exhibited photographic enlargements of band spectra of metals, and Bessemer flame spectra, and gave a description of these phenomena.—At the meeting held May 16, Mr. Albert Taylor read a paper (communicated by Sir Howard Grubb, F.R.S.) on the photographing of the solar corona during total solar eclipses (with special reference to the author's experiences at the Brazilian station at Para Curu, during the total solar eclipse of April 1893), and on the selection of suitable instruments. The author commented upon the results obtained at the various stations at which the eclipse of 1893 was observed, and suggested that the organisation of expeditions to observe the next total solar eclipse (August 8, 1896) should at once be begun.—Mr. A. F. Dixon exhibited models constructed from microscopic sections by a method first used by Prof. His. The sections are drawn by means of a camera lucida, on glass plates covered with negative varnish, and the model is completed by simply placing the plates in order one over the other. This method is found especially useful in tracing the courses and connections of fine nerves in the embryo.

PARIS.

Academy of Sciences, June 11.—M. Lœwy in the chair.—Note on the great coudé equatorial of the Paris observatory, by M. Lœwy.—The green substance of Phyllum Orthoptera of the family of the Phasmidæ, by MM. Henri Becquerel and Charles Brongniart. A spectroscopic examination has determined the identity of this substance with chlorophyll.—On the homologues of quinine; their physiological and therapeutic action, by MM. E. Grimaux, Laborde, and Bourru. The substances cupreïne, methyl cupreïne (quinine), ethyl cupreïne, propyl cupreïne, and amyl cupreïne have been studied. As the molecular weight increases the toxic dose becomes rapidly smaller, and the therapeutic action becomes more vigorous. The ethyl derivative should be used as an antiperiodic when quinine has failed, and the propyl derivative might perhaps be employed as a powerful antithermic in cases of continued fevers.—Observations of the planets AV (Courty, February 11, 1894), AZ (Courty, March 5, 1894), and of Denning's comet (March 26, 1894), made at Bordeaux by MM. G. Rayet, L. Picart, and F. Courty: note by M. G. Rayet.—Discovery of Champsosaurians in beds of phosphorite in the Algerian suessonian, by M. A. Pomel.—On the chromosphere of the sun. A reply to the last note of M. Hale, by M. H. Deslandres.—A new application for bichromated gelatine, by M. Izarn. The material is proposed to be used for the protection of silver surfaces on instruments, backs of mirrors, and so forth. It has given good results in trial cases.—On an application of continued fractions, by M. Stieltjes.—On the algebraical integrals of linear differential equations of the second order, by M. P. Vernier.—On equations of derived partials of the second order, by M. X. Stouff.—On magnetisation produced by Hertzian currents; a magnetic dielectric, by M. Birkeland.—On the nature of electric conductibility, by M. Vaschy.—Measurement and comparison of coefficients of self-induction by alternating currents of great frequency, by M. H. Abraham.—On the mean geometric distance of the elements of a group of surfaces and its application to the calculation of coefficients of induction, by M. Ch. Eug. Guye.—On the estimation of iodine, by MM. A. Villiers and M. Fayolle. The iodine is liberated by means of ferric chloride, taken up by carbon bisulphide, and titrated in the separated solution by standard sodium thiosulphate.—On the acid sulphates of aniline and ortho- and paratoluidine, by M. Edmond Hitzel.—The synthesis of hexamethylene derivatives; triethylphloroglucinol, by M. A. Combes.—A note on the qualitative composition of officinal creosotes from oak and beech woods, by MM. A. Béhal and E. Choay.—Action of primary aromatic bases on dissymmetrical ketonic compounds, by M. L. Simon. The work was undertaken with the object of discovering in aniline derivatives of the form  $\begin{array}{c}\mathrm{R.C.R'}\\ \Vert\\ \mathrm{N.C_6H_5}\end{array}$ indications of an isomerism analogous to that obtaining among oximes. The condensations quoted in the communication were effected in the cold and in the absence of every condensing reagent capable of producing migrations. Isomerism has not been observed in any case.—On the stability of aqueous solutions of mercury bichloride, by M. E. Burcker. The author concludes that (1) ordinary waters cause the immediate decomposition of mercury bichloride, and this action continues under the combined influence of air, light, and the substances contained in the water or brought by the air; (2) the decomposition becomes insignificant when the solution is removed from the influence of air and light; (3) solutions made with distilled water undergo very little change, even when exposed to air and light.—On the preparation of tetrachlorethylene and the action of ozonised oxygen on this body, by M. A. Besson.—On a ptomaïne extracted from the urine of cancer patients, by M. A. B. Griffiths. This substance has the composition $C_8H_5NO_5$, and is termed *cancerine*. It is a very poisonous base, giving alkaloid reactions and crystallising in microscopic needles. It is alkaline and soluble in water.—Researches on the internal ear of the "Roussette de l'Inde" (*Pteropus medius*), by M. Beauregard.—On the characteristics and the evolution of Lomisinés, a new group of anomurous crustacea by M. E. L. Bouvier.—On the development and formation of excretory canals in *Cercaria echinata*, by M. Joannes Chatin.—Diptera parasitic on Acridians: oviparous Muscidæ *à larves oophages.* Burrowing Diptera. By M. J. Künckel d'Herculais.—Intercellular communications in lichens, by M. Georges Poirault.—On the geological lines in the neighbourhood of the observatory of Abbadia (Basses-Pyrénées), by M. P. W. Stuart-Menteath.—Defence against Phylloxera, by M. Rabourdin.

BERLIN.

Meteorological Society, May 1.—Prof. Hellmann, President, in the chair.—Dr. Süring gave an account of a winter sojourn, from December to March, on the Brocken. During the three months he experienced several anticyclones, two periods of storm, and several of complete envelopment in clouds, all of which he described in detail, and then dealt briefly with a whole series of isolated observations made at a height of 1140 m., that is, at the level of the lower clouds. The phenomena touched upon were the formation of rime, force of the wind, sequence of depressions, and maxima of pressure, &c. The outcome of his remarks showed the necessity for a properly equipped station on the Brocken, under expert management. One point of interest may be mentioned, namely that on the Brocken, during an anticyclone the lowest temperature was always observed at the beginning, followed by a rise of temperature in the second half of the period, whereas, as is well known, on the plains the temperature continues to fall right to the very end of the anticyclone.

Physical Society, May 4.—Prof. du Bois Reymond, President, in the chair.—Dr. Pringsheim alluded in appropriate terms to the death in Brooklyn of their foreign member Dr. F. Schulze-Berge.—Prof. König spoke on the number of distinct differences of colour and brightness which can be discriminated in the spectrum. He had made experiments in conjunction with Prof. Dieterici, subsequently verified by Prof. Uhthof, on the mean error existing when matching two tints, and from this he had been able to deduce the total number of differences in tint which a normal trichromatic eye can discriminate from the red to the blue end of the spectrum. Sensitiveness to difference of tint showed two maxima, one in the yellow and one in the greenish-blue, and the total number of distinct differences discriminated was 165. A dichromatic eye, on the other hand, can only discriminate 140 differences. Experiments of the speaker and of Dr. Brodhun formed the basis for determining the number of differences of brightness which can be discriminated, starting with liminal light and increasing it up to a blinding intensity. For both the tri- and di-chromatic eye the number was found to be 650. If it be desired to deduce from the above data the total number of possible visual differences which can be discriminated in a spectrum, it must be remembered that as the intensity of light diminishes, so also does the number of discriminated tints, so that the result is in round numbers 80 × 700 = 56,000. In connection with the above, Prof. von Bezold suggested that by using complementary colours it may be possible to discriminate a much larger number of tints, since, as is well known, two colours which are indistinguishable when compared directly often give quite different complementary colours, and can thus be distinguished.

Physiological Society, May 11.—Prof. du Bois Reymond, President, in the chair.—Dr. Max Verworn spoke on the polar excitation of cells by galvanic currents. Unicellular fresh-water infusoria (Paramœcium) were experimented on, and showed always, on making a constant current, cathodic galvanotropism; by this is meant that all the infusoria in a drop of water placed themselves with their anterior end towards the cathode. They then moved towards and congregated at the cathode. When the direction of the current is reversed the infusoria turn round and move away towards the new cathode. When strong currents are employed it is found that the hinder end of the organism is contracted, and if the stimulation is prolonged the protoplasm is disintegrated. From this the speaker drew the conclusion that the infusoria are anodically excitable, and that the cathodic galvanotropism is due to anodic stimulation. The exact reverse holds good for Opalina, since they are cathodically excitable and anodically galvanotropic. A third group of infusoria (Spirostomum) is transversely galvanotropic.—Dr. Lilienfeld gave an account of his researches on the clotting of blood. He had succeeded in separating Al. Schmidt's fibrinogen into two substances, "thrombosin" and an albumose. The former unites with calcium and forms fibrin, while the albumose retards clotting. The separation of fibrinogen into these two constituents may be brought about by means of acetic acid, nuclein, nucleic acid, and other substances. Blood-clotting accordingly consists in a disintegration of leucocytes setting free nuclein; the latter then decomposes the fibrinogen, and enables the thrombosin to unite with the calcium salts of the blood. While the blood is circulating in the body it contains no free nuclein in solution, and hence clotting is impossible. The speaker further considered that peptones (albumose) and leech-extract prevent clotting by themselves uniting with the calcium of the blood, and thus preventing its union with thrombosin.

Note.—In the report of the meeting of the Meteorological Society for April 3 (NATURE, vol. l. p. 95), for Rassner read Kassner, and for Hasen read Hazen.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

BOOKS.—A Pocket Flora of Edinburgh: C. O. Sonntag (Williams and Norgate).—Proof Spirit and Fiscal Hydrometry: Dr. B. Derham (J. Heywood).—A Handbook to the Study of Natural History: edited by Lady I. Margesson (Philip).—Coloured Vade-Mecum to the Alpine Flora: L. and C. Schröter, 4th edition (Nutt).—Grundzüge der Geometrie: Prof. G. Veronese (Leipzig, Teubner).—Catalogue of Scientific Papers (1874–1883) compiled by the Royal Society of London, Vol. x. (C. J. Clay).—Epitome of the Synthetic Philosophy: F. H. Collins, 3rd edition (Williams and Norgate).—Report of the Meteorological Service of Canada for the Year ending December 31, 1889 (Ottawa)—Zur Fossilen Flora der Polarländer: A. G. Nathorst (Stockholm, Norstedt).—Elementi di Fisica: Prof. A. Roiti, Vol. Primo (Firenze, Monnier).—Zeit-und Streitfragender Biologie: Prof. O. Hertwig, Heft 1 (Jena, Fischer).—Synopsis der Hoeheren Mathematik: J. G. Hagen, Zweiter Band (Berlin, Dames).—Les Oscillations Électriques: H. Poincaré (Paris, Carré).—Geological Sketch Map of Western Australia: H. P. Woodward (Philip).—A Dictionary of Medicine: edited by Sir R. Quain, &c, 2 Vols., new edition (Longmans).—The Physiology of the Carbohydrates: Dr. F. W. Pavy (Churchill).

PAMPHLETS.—Protection from Lightning: A. McAdie (Washington).—The Yellowstone Park: A. Hague (Washington)—Leitneria Floridana: W. Trelease (St. Louis)—Weitere Lichtelectrische Versuche: J. Elster and H. Geitel (Leipzig, Barth).—Report of Mr. Tebbutt's Observatory, the Peninsula, Windsor, N.S.W., for the Year 1893: J. Tebbutt (Sydney).

SERIALS.—Journal of the Chemical Society, June (Gurney and Jackson).—Transactions of the Academy of Science of St. Louis, Vol. vi. No. 15 (St. Louis).—Journal of the Franklin Institute, June (Philadelphia)—Astronomy and Astro-Physics, June (Wesley).—American Naturalist, June (Wesley)—Engineering Magazine, June (Tucker).—Bulletins de la Société d'Anthropologie de Paris, Mars (Paris).—Quarterly Journal of Microscopical Science, June (Churchill).—Intles. Archiv für Ethnographie, Band vii. Heft 3 (Leiden, Brill).—Journal of the Institution of Electrical Engineers, No. 112, Vol. xxiii. (Spon).—Bulletin de la Société Impériale des Naturalistes de Moscou, 1894, No. 1 (Moscou).—Royal Natural History. Part 8 (Warne).—Zeitschrift für Physikalische Chemie, xiv. Band, 2 Heft (Leipzig, Engelmann).—L'Anthropologie, tome v. No. 3 (Paris, Masson).—Field and Garden Crops of the North-West Provinces and Oudh: J. F. Duthie Part 3 (Roorkee).

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